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ABSTRACT

In an effort to determine which factors most consistently identified incoming at-risk students, Prince George's Community College (PGCC), in Maryland, conducted a longitudinal study of fall 1990 entering freshmen without previous college experience. After dividing the cohort into at-risk categories (e.g., age, study load, racial background, socio-economic status, etc.) and following students' academic progress for 4 years, it was determined that results on pre-registration developmental placement tests was the most efficient method for identifying at-risk students. Analyses of other results for the 1990 cohort indicated the following: (1) only 61% enrolled beyond the first two semesters; (2) 59% exited without any recognizable academic accomplishment, such as transfer or a formal degree or certificate, after 4 years, compared to 23% who exited with some accomplishment; (3) the biggest factor in the college's low retention rate was the high proportion of college-unprepared enrollees, with 59% needing remediation on one of three placement tests; (4) students requiring remedial math work faced the greatest chance of failure; (5) only 15% of developmental students completed all required remedial programs, while the chance for academic success for these 15% was almost equal to non-developmental students; and (6) a full-time study load and attendance during all 3 initial semesters increased student chances of completing remedial programs. Data tables and recommendations for improving academic success rates are included. (KP)

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Developmental Placement and Academic Progress:

Tracking "At-Risk" Students in the 1990 Entering Cohort

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Office of Institutional Research and Analysis

Enrollment Analysis EA95-2

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Office of Institutional Research and Analysis

DEVELOPMENTAL PLACEMENT AND ACADEMIC PROGRESS: TRACKING "AT-RISK" STUDENTS IN THE 1990 ENTERING COHORT

Enrollment Analysis EA95-2
January 1995

Introduction and Methodology

In connection with a federal Title III funding grant opportunity, a task force of instructors, student counselors and college administrators convened by the Development Office asked the Office of Institutional Research and Analysis to devise a means to identify the most "at-risk" enrollees in the PGCC student body from available early indicators of college unpreparedness. The identification procedure was to be validated by research tracking the academic progress, or lack thereof, of past "at-risk" and other students belonging to a fall semester entering student cohort in existence long enough to determine likely study outcomes. Based on the finding of this research, the task force would then develop a program of intervention capable of dramatically shifting the odds of "at-risk" student academic success towards the positive.

As its study population OIRA chose Cohort^{90}. This group consists of all first-time-at-any-college fall 1990 entering freshmen. Because Cohort^{90} at this point has been part of PGCC's student body for four years, an analysis of Cohort^{90} student academic performance data is capable of yielding not only good, long-term statistics on semester-by-semester academic progress. It also can give good estimates of final academic outcomes; past cohort studies have indicated that almost 90 percent of the academic fates of cohort members (graduating, transferring to four year schools, exiting as sophomores in good standing, dropping out without formal academic achievement, etc.) are settled by the end of eight major term's worth of potential study.

OIRA broke the Cohort^{90} membership into a number of possible "at-risk" groups (defined by age, study load, racial background, socio-economic status, etc.), compared the relative lack of academic success experienced by each over four years, and concluded that the fairest and most efficient way of identifying genuinely "at-risk" students, especially in terms of early, readily available attribute data, was

through sorting students by the results of pre-registration developmental placement testing. Certainly, an excellent *prima facie* case can be made for asserting that most college failure traces at least proximally to college unpreparedness, which is just what PGCC's developmental placement testing purports to reveal -- the presence or absence of basic academic grounding and whether remedial work to acquire those language and numerical skills needed for successful college-level study is recommended. Above and beyond logic, our research substantiated that, empirically, developmental students were simply the least academically successful and most readily identifiable of all candidate "at-risk" groups examined.

OIRA, next, refined the definition of "at-riskness" by singling out the least successful sub-group within the developmental segment of the cohort: "Math-Plus" students -- those students requiring remediation in at least two of the three developmental areas, one area of which focused on making up mathematical deficits. The reason for this refinement will become evident from the findings presented below.

Throughout this study, OIRA employed two types of standard academic success indicators. The first was a set of variables measuring intermediate academic progress: *study persistence* (percent of students enrolling in at least one term beyond the first fall and spring semesters); *achievement of sophomore status* (percent accumulating at least 30 credit hours within four years of first enrollment); and maintenance of quality course performance (percent with final cumulative grade point average of 2.0 or more). The second consisted of a single seven-category variable showing how students placed in terms of final academic outcomes after four years of possible study:

Transfer to a Four Year School Only -- successful enrollment in a Maryland public senior college or university without earning a PGCC associate degree, occupational certificate or letter-of-recognition[1].

Award Only -- achieving an associate degree, occupational certificate or letter-of-recognition by the end of four years but no evidence of transfer to a senior institution.

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[1] Data supplied by the Maryland Higher Education Commission SOAR project. No tracking mechanism existed for identifying transfers to private senior or out-of-state institutions; thus, our two transfer final outcome categories understate the full extent of PGCC student transference by an unknown but probably significant degree.

Both Transfer and Award -- transfer to a four year school after acquiring an associate degree, occupational certificate or letter-of-recognition.

Exit as Sophomore in Good Standing -- students who accumulated at least 30 credit hours and maintained a 2.0 or better G.P.A. but ceased attending PGCC before the end of the four year study interval (no record of enrollment in or after Spring 1994). In OIRA's view, this is a weaker "success" category than those involving actually earning awards or transfer status but nevertheless represents a definite level of academic achievement which should be recognized as such[2].

The above four outcome types can be combined into a general **academic success** category, which we frequently utilized to get an efficient summary sense of how at-risk students fared under a variety of institutional circumstances. The remaining outcome categories are either neutral or outright negative:

Other Exiters -- all other students with no record of enrollment beyond Fall 1993, including those with overall passing averages (cumulative G.P.A. 2.0+) but pre-sophomore credit hour accumulations or who had earned 30+ credit hours but had sub-standard average grades. The major component of this group, however, were those with neither adequate grades nor significant credit hour accumulations -- the genuine "drop-outs."

Special Motive Students -- those whose stated goals for attending classes at PGCC (personal enrichment, upgrading job skills, etc.) and short-term attendance patterns (only the first and/or second terms) strongly suggested enrollment motives other than the pursuit of a regular program of study leading to an award or transfer to a four year institution. These are the students who purposely set out to take only one or a handful of courses and never had any intention of entering a curriculum program in the first place. They should not be classified as "drop-outs"; rather they are a special group, apart from the regular run of PGCC enrollees, and therefore neutral from the standpoint of student body academic outcomes.

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[2] Exiting sophomores in good standing have made substantial quality academic progress and should be well positioned to continue their higher educational careers at PGCC or any other two year or four year school whenever willing or able in the future. Furthermore, a large but unfixable proportion of students in this category are actually "hidden" four year school transfers -- either current enrollees at out-of-state colleges, Maryland private colleges and universities or to Maryland public institutions after SOAR's most recent data collection deadline of Summer 1993. (See footnote 1).

Table 1

1990 ENTERING COHORT AFTER FOUR YEARS

OUTCOME RESULTS BY DEVELOPMENTAL PLACEMENT GROUPS*

PERCENT OF SUBSAMPLE IN CATEGORY

INTERMEDIATE OUTCOMES	WHOLE COHORT	NON-DEV. STUDENTS	DEV. STUDENTS	DEV.: MATH + OTHER(S)	DEV.: MATH ONLY	DEV.: OTHER COMBS.
Enrolled More than 1 Year	61	67	57	46	55	61
Attemptd at least 1 Course	91	98	86	78	94	94
Earned at least 3 Credits	81	91	74	67	83	84
Earned 30+ Credits	28	43	18	11	24	27
Cum GPA 2.0+ at Exit	55	69	44	39	60	46
FINAL (4 YEAR) OUTCOMES						
Academic Success*	*23*	*38*	*13*	*7*	*16*	*23*
▸ Transfer Only***	8	14	3	1	3	6
▸ Transfer + Award	1	2	<.5	0	0	1
▸ Award Only	5	8	3	2	3	6
▸ Soph/GPA 2+ Exit	9	13	7	4	10	10
Other Exiters	59	48	67	73	61	48
Special Motive Students	5	3	7	8	8	4
Still Enrolled at Year 4	13	12	13	13	14	13
(SUB)SAMPLE TOTALS	2,138	885	1,253	681	194	378

* Excluding Students not taking all 3 placement tests (n=505)

** Includes all bulleted rows below

*** Most recent MHEC/SOAR transfer data which does not include any transfers occurring FY94; Awards combines A.A., Certificates and Letters-of-Recognition

Still in Attendance -- cohort members continuing to the end of the four year interval without either exiting (enrolled in either Spring 1994 or in one or both of the two subsequent summer terms) but also without earned awards or record of transfer; these students are still "in the PGCC pipeline," awaiting a final outcome in Year 5 or beyond.

The Problem Requiring Programmatic Intervention

Judging from the academic performance of the 1990 entering student cohort after four years, Prince George's Community College suffers from a relatively high rate of enrollment attrition and fairly low rates of academic program success (see Table 1):

- Only about three-fifths (61 %) of first time entering freshmen enroll in any terms beyond the first two major semesters.

- Just over two-fifths (43 %) get off to a "good start" in their study programs, i.e., attend all three initial major terms -- first fall, first spring, second fall. (Research shows that "good start" students, who benefit from early development of effective study habits, an uninterrupted chance to get their academic bearings, and the opportunity to establish a firm foundation in their introductory course work, enjoy far greater odds of completing their study goals than those whose early attendance is more intermittent.)

- Fewer than a quarter (23 %) exit PGCC with any sort of recognizable academic accomplishment -- either some combination of transfer to a four year higher educational institution and/or earning a formal award (A.A., Certificate, Letter-of-Recognition), or leaving PGCC without transfer or award but as a sophomore (30+ credit hours) in good academic standing (final GPA 2.0+). (This latter group includes a high proportion of probable transfer students, not definitely identifiable as transfers either because of late reporting by the Maryland Higher Education Commission's transfer tracking system or because MHEC's system does not track private collegiate and out-of-state institutions.)

- Around three-fifths (59 %) of first time PGCC students exit the college without any discernable accomplishments after four years (probable "drop-outs").

At-Risk Students at PGCC

The biggest single factor contributing to PGCC's uninspiring retention and outcomes record is the high disproportion of college-unprepared enrollees in its student body:

In 1990, almost three-fifths (59 %) of all first time entering students who took all three developmental placement tests qualified for at least one of three developmental areas (reading, English usage, mathematics). Of these students needing remediation, two-thirds (67 %) needed developmental work in more than one area and over a third (35 %) in all three areas.

Table 1 shows that compared with non-developmental students, students requiring developmental work were somewhat less likely to enroll beyond the first year (67 to 57 %, respectively). They were also significantly less likely to begin credit course work (98 to 86 %) and to have passed at least one credit course (91 to 74 %). And the disparities become quite large when considering more substantial accomplishments: achieving sophomore status (43 to 18 %), exiting in good academic standing (69 to 44 %), and achieving a successful academic final outcome (38 to 13 %); an important difference in dropping out without apparent academic benefit can also be noted (48 to 67 %).

Within the developmental group, students requiring remedial math work face the greatest chance of failure, especially if their need for math remediation combines with remedial needs in other areas as well. Of these developmental "Math-plus" students, the most at-risk category at PGCC, only 11 percent reach sophomore status, less that two-fifths (39 %) leave here in good academic standing, only 7 percent qualify as academic successes by our generous final outcomes definition and almost three-quarters seem in the end to fall into the "drop-out" category.

Developmental math students have such little success at PGCC largely because of the great difficulty students have completing the development math program, especially compared with other developmental programs (see Table 2). Around a third requiring reading and English usage programs manage completion (36 and 32 %, respectively), but only 14 percent of developmental math students do so. And fewer than a fifth of students completing developmental reading and English needed more than one course, but over half (53 %) of students completing developmental math needed at least three semesters of developmental coursework.

Table 2

1990 ENTERING COHORT AFTER FOUR YEARS

DEVELOPMENTAL PROGRAM PROGRESS BY DEVELOPMENTAL AREA

SUBSAMPLE NUMBERS INDICATED WITHIN [ ]

DEVELOPMENTAL PROGRAM PROGRESS	DEV. READING	DEV. ENGLISH	DEV. MATH
% All Developmental Students	**68**	**64**	**69**
All Students Requiring Area	[791]	[752]	[807]
% Never Took Dev. Area Course	36	26	29
% Completing Area	36	32	14
Students with at least 1 Area Course	[509]	[557]	[571]
% Completing Area	57	43	19
Course Takers Completing Area	[291]	[241]	[111]
% in 1 Course Attempt	72	40	16
% in 2 Course Attempts	20	43	31
% in 3 or More Attempts	8	17	53
Mean # Course Attempts	1.37	1.90	2.79
Course Takers *Not* Completing Area	[218]	[316]	[460]
Mean # Course Attempts	1.44	1.65	1.88

Since completion of all developmental programs is essential for pursuing credit program study, almost by definition students who fail to get out of developmental study cannot succeed in any formal academic sense at PGCC. Overall (see Table 3 below), only three developmental students in twenty (15 %) complete all required remedial programs (Math-Plus students - 6 %). Another 25 percent move towards fulfilling their developmental obligations by finishing at least one required area, but not all required areas, while a full three-fifths (60 %) complete none at all. Given the predominance of developmental enrollees in our student body, this goes far to explain PGCC's low positive outcomes rates.

Table 3

1990 ENTERING COHORT AFTER FOUR YEARS *DEVELOPMENTAL PROGRAM PROGRESS BY AT-RISK GROUPS*				
DEVELOPMENTAL AREAS COMPLETED	ALL DEV. STUDENTS	MATH-PLUS	MATH ONLY	OTHER DEV.
% Completed No Areas	60	56	83	57
% Completed Some Areas	25	38	---	13
% Completed All Areas	15	6	17	30
SUBSAMPLE TOTALS	1,253	681	194	378

Factors Contributing to Academic Progress

On the other hand, according to Table 4, those few PGCC developmental students who do manage to fulfill their remedial program requirements find their chance at academic success almost equalized compared with non-developmental students: 38 percent of non-developmental students after four years score academic successes but a relatively close 30 percent of completed developmental program students also made the grade. Even a fifth (22 %) of the completed Math-Plus students ended up with an award, transfer of sophomore/good standing exit.

As one might expect, study load also impacts significantly on student academic outcomes. After four years, Cohort 1990 full time non-developmental students proved to be more than twice as likely as part timers to earn 30 credits or more (55 to 24 %, respectively) and about two-and-a-half times more likely to achieve an award, transfer or sophomore/good standing exit status (51 to 17 %). Full time study also more than doubled developmental student chances at sophomore status (full time 26 %, part time 11 %) and more than tripled the final outcome success rate (22 to 7 %, respectively). Even Math-Plus students studying full time got a major boost in final outcome success chances (14 % to 3 %, respectively).

But the most powerful contributor to academic progress turned out to be getting or not getting a **"good start"** (attendance during all three initial major terms). Non-developmental "Good Start" students were more than one-and-a-half times as likely as "Other Starters" to make sophomore status after four years (87 to 53 %, respectively) and *six times* as likely to place into the successful final outcome

category (67 to 11 %). Getting a "good start" pushed the developmental student 30+ credits rate to a very respectable 60 percent (only 34 percent other remedial students became sophomores), and multiplied successful final outcome odds *15 times* ("Good Start" - 30%, Other - 2%) . Even a fair proportion of "Good Start" Math-Plus developmental students scored a successful academic outcome -- 18 percent (Other - 1 %).

Table 4

1990 ENTERING COHORT AFTER FOUR YEARS

FINAL OUTCOME SUCCESS BY DEVELOPMENTAL PLACEMENT GROUPS CONTROLLED FOR STUDY PROGRAM FACTORS

PERCENT OF SUBSAMPLE FINAL OUTCOME "SUCCESSFUL"*

Success Factors	Whole Cohort	Non-Dev. Students	Dev. Students	Dev.: Math + Other(s)	Dev.: Math Only	Dev.: Other Combs.
Whole Subsample	23	38	13	7	16	23
Full Time Load	36	51	22	14	25	31
Part Time Load	10	17	7	3	12	12
Good Start Pattern	47	67	30	18	38	44
Other Attend. Pattern	6	11	2	1	4	4
Dev. Progress: No Areas Completed	---	---	10	3	14	20
Some/Not All Comp.	---	---	11	11	---	8
Completed All Areas	---	---	30	22	28	33
(Sub)Sample Totals	2,138	885	1,253	681	194	378

* Any of following outcomes: earned A.A., Certificate, Letter-of-Recognition or transfer to 4-year college or university, or exited as a sophomore in good standing

Because of the apparent importance of the "good start" phenomenon for PGCC student academic progress, we attempted to substantiate that its effect on performance indicators was not simply an artifact of the number of attendance terms built into its conceptualization. Our main test was to compare final outcome success rates for all "Good Start" students (47 %) with those for students who did not enroll in a row for the first three major terms but nevertheless attended at least three major terms over the four years covered by the study. Their success rate proved to be only 14 percent. Non-"Good Start" students attending fewer than three major terms turned in a collective success rate of 3 percent. Thus, the "Good Start" factor's power does seem to reside in the solid beginnings experienced by "Good Start" students, not just in number of terms attended.

Both study load and "Good Start" factors also affect developmental student chances to complete their remedial programs, the vital entrance step to continued credit study (see Table 5). Twenty percent of full time developmental students completed all their remedial requirements by four years out compared with only 11 percent of the part timers. And 27 percent of developmental students off to a "good start" finished their developmental programs compared with only 7 percent of all other developmental students. The completion rates for Math-Plus students were: full time 10 %/part time 3 % and "good start" 14 %/other start 1 percent. In addition, 75 percent of the "Good Start" Math-Plus students finished at least one remedial program compared with 26 percent of other start Math-Plus students.

Table 5

1990 ENTERING COHORT AFTER FOUR YEARS

EFFECT OF STUDY PROGRAM FACTORS ON DEVELOPMENTAL COMPLETION RATES

	Full Time Load			Part Time Load		
	No Dev Areas Complt	Some/Not All Dev. Complete	All Dev Areas Complete	No Dev Areas Complt	Some/Not All Dev. Complete	All Dev Areas Complete
All Dev Students	51	29	20	67	22	11
>Math-Plus	46	44	10	63	34	3
>Math Only	79	---	21	81	---	19
>Other Dev Required	50	14	36	65	11	24

	Good Start Attendance Pattern			Other Attendance Pattern		
	No Dev Areas Complt	Some/Not All Dev. Complete	All Dev Areas Complete	No Dev Areas Complt	Some/Not All Dev. Complete	All Dev Areas Complete
All Dev Students	35	39	27	77	16	7
*Math Area + Other(s)	26	61	14	74	25	1
*Math Area Only	54	---	46	94	---	6
*Other Dev. Required	40	18	43	72	8	20
(Sub)Sample Totals	2,138	885	1,253	681	194	378

NOTE: Row percents within analysis category sum to 100 %; sums may slightly vary from 100 percent due to rounding

Implications for Enhancing Academic Progress Rates at PGCC

Relatively low academic progress rates at PGCC are primarily a product of a very high concentration of academically unprepared enrollees in the student body in combination with a relative inability of these students to complete the remediation necessary to proceed in regular credit program study. Furthermore, the first three initial major terms seem to constitute a particularly important *formative period* largely determining how well students will function in their course work.

These findings suggest that new college initiatives to enhance institutional academic progress rates should focus upon developmental students, especially those needing very difficult-to-complete math remediation. The national literature suggests the following be part of PGCC's initiatives to assist at-risk students:

- A highly structured, academically and socially enhanced program covering the first three major terms to encourage as many as possible to get off to a "good start" in their PGCC studies
- More-than-ordinary tutoring and counseling to promote completion of remedial work
- Social (e.g., built-in casual time peer interaction opportunities) and academic incentives (e.g., opportunity to accumulate some early credits while still doing developmental work) to induce "staying the course"

- A focus on the earliest acquisition of basic math skills, to be made as pleasant and self-reaffirming as possible

- Inducements to full-time or near full-time study, and otherwise utilizing class schedules, wherever and whenever possible, to maximize study continuity and the regular accumulation of knowledge and skills

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